St. Mary's R.C. Primary School

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Design Technology Curriculum Overview					
Rational	It is our intention at St. Mary's that ALL children develop and have a clear understanding of the design process and how to refine the quality of outcomes at each stage a balance of skills in all the strands of DT: • textiles • structures • mechanisms • electrical systems • computing Cooking and nutrition build on knowledge and understanding of science, geography and history and develop cooking skills progressively.				
Approach	Start with a relevant and appropriate problem to solve Using a clear design process for all units is followed with a clear progression in skills in the specific order of: • exploring and communicating • planning • making • modelling • reviewing • evaluating Links to wider curriculum are made where appropriate.				
SEND	Children who are identified as working below ARE may have specific needs which contribute to their difficulty in this area. Where needs are specifically related to a Special Educational Need or Disability, specific and targeted support will be outlined and reviewed through the child's EHCP and/ or Pupil Progress Meetings; elements of which may be recommended by external agencies. It is also important to recognise that children identified as having SEND may not always be the least able in a particular subject but could excel in another subject. Pupils' attainment will be assessed in a subject-specific manner and based on their strengths rather than barriers.				
Values	**Kindness**	**Tolerance**	**Friendship**	**Aiming High**	**Positivity**

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Concepts	Mechanisms	Structures	Textiles	Cooking and nutrition	Computing	Electrical	Digital World
Our curriculum documents for EYFS are planned and sequenced in line with Development Matters and the National Curriculum subjects. Please see Early Years planning.							

Year 1 Curriculum	**Autumn**	**Spring**	**Summer**
Topic Titles and Knowledge Outcomes	**<u>Structures</u>** **Can you construct a windmill?** On completion of the unit, pupils will know… • that the shape of materials can be changed to improve the strength and stiffness of structures. • that cylinders are a strong type of structure (e.g. the main shape used for windmills and lighthouses). • that axles are used in structures and mechanisms to make parts turn in a circle. • that different structures are used for different purposes. • that a structure is something that has been made and put together. • that a client is the person being designing for.	**<u>Mechanisms</u>** **Can you make a moving story book?** On completion of the unit, pupils will know… • that a mechanism is the parts of an object that move together. • that a slider mechanism moves an object from side to side. • that a slider mechanism has a slider, slots, guides and an object. • that bridges and guides are bits of card that purposefully restrict the movement of the slider. • that in Design and Technology we call a plan a 'design'.	**<u>Cooking and Nutrition</u>** **Can you make a smoothie?** On completion of the unit, pupils will know… • and understand the difference between fruits and vegetables. • and understand that some foods typically known as vegetables are fruits (e.g. cucumber). • that a blender is a machine which mixes ingredients together into a smooth liquid. • that a fruit has seeds, and a vegetable does not. • that fruits grow on trees or vines. • that vegetables can grow either above or below ground. • that vegetables can come from different parts of the plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber).

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	• that design criteria is a list of points to ensure the product meets the client's needs and wants. • that a windmill harnesses the power of wind for a purpose like grinding grain, pumping water or generating electricity. • that windmill turbines use wind to turn and make the machines inside work. • that a windmill is a structure with sails that are moved by the wind. • the three main parts of a windmill are the turbine, axle and structure		
Lesson Sequence	Lesson 1 – Designing the Structure LC: Can I include individual preferences and requirements in my design? Lesson 2 – Assembling the Structure LC: Can I make a stable structure? Lesson 3 – Assembling the Windmill LC: Can I assemble the components of my structure? Lesson 4 – Testing and Evaluating LC: Can I evaluate my project and adapt my design? Lesson 5 – Knowledge Capture Task	Lesson 1 – Exploring Sliders and Movement LC: Can I explore making mechanisms? Lesson 2 – Design LC: Can I design a moving story book? Lesson 3 – Construction LC: Can I construct a moving picture? Lesson 4 – Testing and Evaluating LC: Can I evaluate my finished product? Lesson 5 – Knowledge Capture Task	Lesson 1 – Fruit or Vegetable? LC: Can I identify if a food is a fruit or a vegetable? Lesson 2 – Explore where fruit and vegetables grow. LC: Can I identify where plants grow and which parts we eat? Lesson 3 – Smoothie Ingredients Tasting LC: Can I taste and compare fruit and vegetables? Lesson 4 – Making Smoothies LC: Can I make a fruit and vegetable smoothie?

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			Lesson 5 – Knowledge Capture Task
Knowledge Capture Task	Assessment D&T Y1: Constructing a windmill quiz.	Assessment D&T Y1: Making a moving story book quiz.	Assessment D&T Y1: Fruit and vegetables quiz.
NC Design Technology Links	**Design** Create purposeful, functional, appealing products for themselves and other users based on design criteria. **Generate** Develop, model and communicate their ideas through talking, drawing, templates, mock- ups and, where appropriate, information and communication technology. **Make** Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]. Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. **Build**	**Design** Create purposeful, functional, appealing products for themselves and other users based on design criteria. **Generate** Develop, model and communicate their ideas through talking, drawing, templates, mock- ups and, where appropriate, information and communication technology. **Make** Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]. Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. **Build** Build structures, exploring how they can be made stronger, stiffer and more stable. **Evaluate**	**Design** Create purposeful, functional, appealing products for themselves and other users based on design criteria. **Generate** Develop, model and communicate their ideas through talking, drawing, templates, mock- ups and, where appropriate, information and communication technology. **Make** Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]. Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. **Evaluate** Explore and evaluate a range of existing products. Evaluate their ideas and products against design criteria.

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	Build structures, exploring how they can be made stronger, stiffer and more stable. **Evaluate** Explore and evaluate a range of existing products. Evaluate their ideas and products against design criteria. **Technical Knowledge** Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products	Explore and evaluate a range of existing products. Evaluate their ideas and products against design criteria. **Technical Knowledge** Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products	**Technical Knowledge** Explore where food comes from.
Possible endpoints and support for the least able	The key to success in the classroom lies in having appropriate adaptations, accommodations, and modifications made to the curriculum. As some pupils with SEND may need longer to master particular areas of the curriculum, all staff are committed to adapting their teaching and providing tailored or specialised resources to enable pupils with SEND to access the curriculum.		
Cross Curricular Links	**Mathematics** • Pupils should be taught to recognise and name common two-dimensional and three dimensional shapes.	**English** Reading – Comprehension • Pupils should be taught to develop pleasure in reading, motivation to read, vocabulary and understanding by learning to appreciate rhymes and poems, and to recite some by heart.	**Science** • Working scientifically: Identifying and classifying. • Using their observations and ideas to suggest answers to questions. • What constitutes a healthy diet (including understanding calories and other nutritional content). • The principles of planning and preparing a range of healthy meals.
Trip and Visitors			

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Prior Learning Links	Please recap on the previous year groups learning before embarking on the current topic. Each unit of work will start with a gathering of knowledge and finish with a knowledge capture task.

Year 2 Curriculum	Autumn	Spring	Summer
Topic Titles and Knowledge Outcomes	**<u>Mechanisms</u>** **Can you construct a fairground wheel?** On completion of the unit, pupils will know… • that different materials have different properties and are therefore suitable for different uses. • the features of a Ferris wheel include the wheel, frame, pods, a base an axle and an axle holder. • that it is important to test a design as they go along so that they can solve any problems that may occur.	**<u>Cooking and Nutrition</u>** **Can you create a healthy wrap?** On completion of the unit, pupils will know… • that 'diet' means the food and drink that a person or animal usually eats. • and understand what makes a balanced diet. • where to find the nutritional information on packaging. • that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar. • and understand that they should eat a range of different foods from each food group, and roughly how much of each food group. • that nutrients are substances in food that all living things need to make energy, grow and develop. • that 'ingredients' means the items in a mixture or recipe.	**<u>Textiles</u>** **Can you design and make a pouch?** On completion of the unit, pupils will know… • that sewing is a method of joining fabric. • that different stitches can be used when sewing. • and understand the importance of tying a knot after sewing the final stitch. • that a thimble can be used to protect my fingers when sewing.

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		• that I should only have a maximum of five teaspoons of sugar a day to stay healthy. • that many foods and drinks we do not expect to contain sugar do; we call these 'hidden' sugars.	
Lesson Sequence	Lesson 1 – Design a Ferris Wheel LC: Can I explore wheel mechanisms and design a Ferris Wheel? Lesson 2 – Planning the Build LC: Can I select appropriate materials? Lesson 3 – Building the Frame and Wheels LC: Can I build and test a moving wheel? Lesson 4 – Adding Pods and Decoration LC: Can I make and evaluate a structure with a rotating wheel? Lesson 5 – Knowledge Capture Task	Lesson 1 – Hidden Sugars in Drinks LC: Can I explain what makes a balanced diet? Lesson 2 – Taste Testing Combinations LC: Can I taste test food combinations? Lesson 3 – Designing and Making a Wrap LC: Can I design a healthy wrap? Lesson 4 – Making and Evaluating LC: Can I make a healthy wrap? Lesson 5 – Knowledge Capture Task	Lesson 1 – Running Stitch LC: Can I sew a running stitch? Lesson 2 – Using a Template LC: Can I sew a running stitch? Lesson 3 – Making a Pouch LC: Can I join fabrics using a running stitch? Lesson 4 – Decorating a Pouch LC: Can I decorate a pouch using fabric glue or stitching? Lesson 5 – Knowledge Capture Task
Knowledge Capture Task	Assessment D&T Y2: Fairground wheel quiz.	Assessment D&T Y2: A balanced diet quiz.	Assessment D&T Y2: Pouches quiz.

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NC Design Technology Links	**Design** Create purposeful, functional, appealing products for themselves and other users based on design criteria. **Generate** Develop, model and communicate their ideas through talking, drawing, templates, mock- ups and, where appropriate, information and communication technology. **Make** Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]. Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. **Build** Build structures, exploring how they can be made stronger, stiffer and more stable. **Evaluate**	**Design** Design purposeful, functional, appealing products for themselves and other users based on design criteria. **Make** Use basic principles of a healthy and varied diet to prepare dishes. **Evaluate** Explore and evaluate a range of existing products. Evaluate their ideas and products against design criteria. **Technical Knowledge** Understand where food comes from.	**Design** Design purposeful, functional, appealing products for themselves and other users based on design criteria. **Generate** Develop, model and communicate their ideas through talking, drawing, templates, mock- ups and, where appropriate, information and communication technology. **Make** Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]. Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. **Evaluate** Explore and evaluate a range of existing products. Evaluate their ideas and products against design criteria. **Technical Knowledge** Explore and use ways of joining and fastening using a range of materials.

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	Explore and evaluate a range of existing products. Evaluate their ideas and products against design criteria. **Technical Knowledge** Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products		
Possible endpoints and support for the least able	The key to success in the classroom lies in having appropriate adaptations, accommodations, and modifications made to the curriculum. As some pupils with SEND may need longer to master particular areas of the curriculum, all staff are committed to adapting their teaching and providing tailored or specialised resources to enable pupils with SEND to access the curriculum.		
Cross Curricular Links	**Mathematics** Identify and describe the properties of 2D shapes, including the number of sides and line symmetry in a vertical line'. **Science** Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses'	**Mathematics** Compare and order lengths, mass, volume /capacity and record the results using >, < and =.	**Science** Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.
Trip and Visitors			
Prior Learning Links	Please recap on the previous year groups learning before embarking on the current topic. Each unit of work will start with a gathering of knowledge and finish with a knowledge capture task.		

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Year 3 Curriculum	Autumn	Spring	Summer
Topic Title and Knowledge Outcomes	**Cooking and nutrition:Eating Seasonally** **Do I understand what eating seasonally means?** On completion of this unit, pupils will know: •how to explain that fruits and vegetables grow in different countries based on their climates. •and understand that seasonal fruits how and why vegetables grow in each season. •that eating seasonal fruit and vegetables positively affects the environment. •how to design a tart recipe using seasonal ingredients.	**Electrical systems** **Can I design and make an electrical poster?** On completion of this unit, pupils will know: • what 'information design' is and understand its impact, considering what could happen if we had no signage, posters, or written communication in public places of interest. • research and choose a specific Ancient Roman topic on which to base their initial poster ideas. • complete design criteria based on a client's request. • roughly sketch four initial poster ideas, indicating where a bulb will be located for each. • review their initial ideas against the design criteria and peer feedback, developing a final design. •assemble an electric poster, including a functional simple circuit with a bulb, following a demonstration.	**Structures combined with Mechanisms** **Can you design and make pneumatic toy?** On completion of the unit, pupils will know… • and understand how pneumatic systems work. • and understand that pneumatic systems can be used as part of a mechanism. • that pneumatic systems operate by drawing in, releasing and compressing air. • and understand how sketches, drawings and diagrams can be used to communicate design ideas. • that exploded diagrams are used to show how different parts of a product fit together. • that thumbnail sketches are small drawings to get ideas down on paper quickly.

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		• acknowledge, with a brief explanation, the need to mount the poster using corrugated card. • test that the simple circuit works by adding a battery. • evaluate their electric posters in a letter to a client.	
Lesson Sequence	Lesson 1: Food around the world LC: Can I explain why food comes from different places around the world? Lesson 2: Seasonal food Can I explain the benefits of seasonal foods? Lesson 3: Cutting and peeling LC: Can I develop cutting and peeling skills? Lesson 4: LC: Tasting seasonal ingredients To evaluate seasonal ingredients. Lesson 5: Making a mock-up LC: Can I design a mock-up using criteria? Lesson 6: Evaluating seasonal tarts To evaluate a dish.	Lesson 1: Information design LC: Can I understand the purpose of information design? Lesson 2: Topic research LC: Can I research a set topic to develop a range of initial ideas? Lesson 3: Design development LC: Can I develop an initial idea into a final design? Lesson 4: Electric poster assembly LC Can I assemble my final product and incorporate a simple circuit? Lesson 5: Knowledge Capture Task	Lesson 1 – Exploring Pneumatics LC: Can I explain how pneumatic systems work? Lesson 2 – Designing a Pneumatic Toy LC: Can I design a toy that uses a pneumatic system? Lesson 3 – Making Pneumatic Toys LC: Can I create a stable pneumatic system? Lesson 4 – Decorating and Assembling my Toy – focus on both movement and stability. LC: Can I test and finalise ideas against design criteria? Lesson 5 – Knowledge Capture Task

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Knowledge Capture Task	Assessment D&T Y3: Eating Seasonally quiz	Assessment D&T Y3: Electronic Systems An Electrical Poster quiz.	Assessment – D&T Y3: Mechanical systems: Pneumatic toys quiz.
NC Design Technology Links	**Design** Designing a recipe for a sweet or savoury seasonal tart. **Make** Following the instructions within a recipe. Tasting seasonal ingredients. Selecting seasonal ingredients. Peeling ingredients safely. Cutting safely with a vegetable knife. **Evaluate** Establishing and using design criteria to help test and review dishes. Describing the benefits of seasonal fruits and vegetables and the impact on the environment. Suggesting points for improvement when making a seasonal tart. **Technical Knowledge** To know that not all fruits and vegetables can be grown in the UK.	**Design** Carry out research based on a given range of initial ideas. **Generate** Generate a final design for the electric poster with consideration to the client's needs and design criteria. Design an electric poster that fits the requirements of a given brief. Plan the positioning of the bulb (circuit component) and its purpose. **Make** Create a final design for the electric poster. Mount the poster onto corrugated card to improve its strength and allow it to withstand the weight of the circuit on the rear. Measure and mark materials out using a template or ruler Fit an electrical component (bulb).	**Design** Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at individuals or groups. **Generate** Develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. **Make** Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. Select from and use a wide range of materials and components, including construction materials, textiles, according to their characteristics. **Build**

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	To know that climate affects food growth. To know that vegetables and fruit grow in certain seasons. To know that cooking instructions are known as a 'recipe'. To know that imported food is food which has been brought into the country. To know that exported food is food which has been sent to another country. To know that eating seasonal foods can have a positive impact on the environment. To know that similar coloured fruits and vegetables often have similar nutritional benefits. To know that the appearance of food is as important as taste.	Learn ways to give the final product a higher quality finish (e.g. framing to conceal a roughly cut edge). **Evaluate** Learning to give and accept constructive criticism on own work and the work of others. Testing the success of initial ideas against the design criteria and justifying opinions. Revisiting the requirements of the client to review developing design ideas and check that they fulfil their needs. **Technical Knowledge** Understand that an electrical system is a group of parts (components) that work together to transport electricity around a circuit. Understand common features of an electric product (switch, battery or plug, dials, buttons etc.). Understand a list example of common electric products (kettle, remote control etc.). Understand that an electric product uses an electrical system to work (function).	Drawing on prior knowledge on structures, explore how their toy can be made stronger, stiffer and more stable. **Evaluate** Investigate and analyse a range of existing products. Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. **Technical Knowledge** Understand how key events and individuals in design and technology have helped shape the world. Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]

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		Know the name and appearance of a bulb, battery, battery holder and crocodile wire to build simple circuits.	
Possible endpoints and support for the least able	The key to success in the classroom lies in having appropriate adaptations, accommodations, and modifications made to the curriculum. As some pupils with SEND may need longer to master particular areas of the curriculum, all staff are committed to adapting their teaching and providing tailored or specialised resources to enable pupils with SEND to access the curriculum.		
Cross Curricular Links	**Human and physical geography –** climate zones.	**History** A study of an aspect or theme in British history that extends pupils' chronological knowledge beyond 1066. **PSHE** Developing strategies for keeping safe in the local environment or unfamiliar places (rail, water, road)'	
Trip and Visitors			
Prior Learning Links	Please recap on the previous year groups learning before embarking on the current topic. Each unit of work will start with a gathering of knowledge and finish with a knowledge capture task.		

Year 4 Curriculum	Autumn	Spring	Summer
Topic Titles and Knowledge Outcomes	**Electrical** **Can you create a torch?** On completion of the unit, pupils will know…	**Computing** **Can you create a mindful moments timer?** On completion of the unit, pupils will know…	**Textiles: Cross Stitch and Appliques** **Can you create an Egyptian collar?** On completion of the unit, pupils will know…

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	• that an electrical circuit must be complete for electricity to flow. • that a switch can be used to complete and break an electrical circuit. • the features of a torch: case, contacts, batteries, switch, reflector, lamp, lens. • facts from the history and invention of the electric light bulb(s) - by Sir Joseph Swan and Thomas Edison.	• and understand what variables are in programming. • some of the features of a micro: bit. • that an algorithm is a set of instructions to be followed by the computer. • that it is important to check code for errors(bugs). • that a simulator can be used as a way of checking code works before installing it onto an electronic device. • and understand the terms 'ergonomic' and 'aesthetic'. • that a prototype is a 3D model made from cheap materials, that allows us to test design ideas and make better decisions about size, shape and materials. • that an exhibition is a way for companies to showcase products, meet potential new customers and gather feedback from users.	• that appliqué is a way of mending or decorating a textile by applying smaller pieces of fabric. •that a product's function relies on material choices. •and identify and explain some materials and explain their aesthetic and functional properties.
Lesson Sequence	Lesson 1 – Electrical Products LC: Can I learn about electrical items and how they work? Lesson 2 – Evaluating Torches	Lesson 1 – Analysing Timers LC: Can I evaluate existing products? Lesson 2 – Designing for the User LC: Can I develop design criteria? Lesson 3 – Programming the Timer	Lesson 1: Cross-stitch and appliqué LC: Can I learn how to sew cross-stitch and appliqué? Lesson 2: Egyptian collars LC: Can I develop and use a template?

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	LC: Can I analyse and evaluate electrical products? Lesson 3 – Torch Design LC: Can I make and evaluate a torch? Lesson 4 – Torch Assembly LC: Can I make and evaluate a torch? Lesson 5 – Knowledge Capture Task	LC: Can I program and control a product? Lesson 4 – Prototypes LC: Can I develop and communicate ideas Lesson 5 – Knowledge Capture Task	Lesson 3: Developing the collars LC: Can I assemble fabric parts into a fabric product? Lesson 4: To decorate fabric collars LC: Can they finish their collars using appliqué and cross-stitch? Lesson 5: Knowledge Capture Task
Knowledge Capture Task	Assessment D&T Y4: Electrical systems: Torches quiz.	Assessment Y4: Digital world: Mindful moment timer quiz.	Assessment Y4: Textiles : Cross Stitch and Appliques quiz.
NC Design Technology Links	**Design** Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at individuals or groups. **Generate** Develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. **Make**	**Design** Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at individuals or groups. **Make** Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. **Evaluate** Investigate and analyse a range of existing products. Evaluate their ideas	**Design** Designing and making a template from an existing cushion and applying individual design criteria. **Make** Following design criteria to create a cushion or Egyptian collar. Selecting and cutting fabrics with ease using fabric scissors. Threading needles with greater independence. Tying knots with greater independence. Sewing cross stitch to join fabric. Decorating fabric using appliqué. Completing design ideas with stuffing

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	Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. Select from and use a wide range of materials and components, including construction materials, textiles according to their characteristics. **Evaluate** Investigate and analyse a range of existing products. Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. **Technical Knowledge** Understand how key events and individuals in design and technology have helped shape the world. Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors].	and products against their own design criteria and consider the views of others to improve their work. **Technical Knowledge** Apply their understanding of computing to program, monitor and control their products	and sewing the edges (Cushions) or embellishing the collars based on design ideas (Egyptian collars). **Evaluate** Evaluating a product and thinking of other ways in which to create similar items. **Technical Knowledge** Understand that a fastening is something which holds two pieces of material together for example a zipper, toggle, button, press stud and Velcro. Understand that different fastening types are useful for different purposes. Understand that creating a mock up (prototype) of their design is useful for checking ideas and proportions.

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Possible endpoints and support for the least able	The key to success in the classroom lies in having appropriate adaptations, accommodations, and modifications made to the curriculum. As some pupils with SEND may need longer to master particular areas of the curriculum, all staff are committed to adapting their teaching and providing tailored or specialised resources to enable pupils with SEND to access the curriculum.		
Cross Curricular Links	**Science** Identify common appliances that run on electricity. Construct a simple series electrical circuit Identify common appliances that run on electricity. identifying and naming its basic parts, Including cells, wires, bulbs, switches and buzzers. Identify if a lamp will light in a simple series circuit, based on whether the lamp is part of a complete loop with a battery. Recognise that a switch opens and closes a circuit and associate this with if a lamp lights in a simple series circuit. Recognise some common conductors and insulators, and associate metals with being good conductors.	**PSHE** Choices about healthy lifestyle and the importance of mental health. **Computing** Design, write and debug programs that accomplish specific goals. **Maths** Geometry – properties of shapes.	**History** The achievements of the earliest civilizations – an overview of where and when the first civilizations appeared and a depth study of Ancient Egypt.
Trip and Visitors			

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Prior Learning Links	Please recap on the previous year groups learning before embarking on the current topic. Each unit of work will start with a gathering of knowledge and finish with a knowledge capture task.

Year 5 Curriculum	Autumn	Spring	Summer
Topic Titles and Knowledge Outcomes	**<u>Mechanical Systems: Gears and Pulleys</u>** **Can I explore gears and pulleys?** On completion of the unit, pupils will know… • give examples of machines that use gears and/or pulleys. • describe how gears and pulleys work and their purpose. • design and make a gear and pulley system. • write a problem statement. • write questions for market research, provide feedback and research market competitors. • write and use a design brief to guide design.	**<u>Structures</u>** **Can I design and build a bridge?** On competition of the unit, pupils will know… • and understand some different ways to reinforce structures. • and understand how triangles can be used to reinforce bridges. • that properties are words that describe the form and function of materials. • and understand why material selection is important based on properties. • and understand the material (functional and aesthetic) properties of wood.	**<u>Cooking and Nutrition</u>** **What could be healthy?** On completion of the unit, pupils will know… • That beef comes from cows reared on farms. •That recipes can be adapted to suit nutritional needs and dietary requirements. •That nutritional information is found on food packaging. •That coloured chopping boards can prevent cross-contamination. •That food packaging serves many purposes.

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	• evaluate a product against a set of design criteria, provide useful feedback and incorporate changes. • draw and annotate an eco-gadget bike design.	• and understand the difference between arch, beam, truss and suspension bridges. • and understand how to carry and use a saw safely.	
Lesson Sequence	Lesson 1: Gears LC: Can I create a working gear system and explain its function? Lesson 2: Improving gear design LC: Can I improve a working gear system and suggest some applications? Lesson 3: Pulleys LC: Can I create a working pulley system and explain its function? Lesson 4: Eco-gadget bike project: Market research LC: Can I conduct market research to discover useful tasks an eco-gadget bike could perform? Lesson 5: Knowledge Capture Task	Lesson 1 – Arch and Beam Bridges LC: Can I explore how to reinforce a beam (structure) to improve its strength? Lesson 2 – Spaghetti Truss Bridges LC: Can I build a spaghetti truss bridge? Lesson 3 – Building Bridges LC: Can I build a wooden truss bridge? Lesson 4 – Finalising Bridges LC: Can I complete, reinforce and evaluate my truss bridge? Lesson 5 – Knowledge Capture Task	Lesson 1: From farm to fork LC: Can I understand how ingredients are reared and processed? Lesson 2: Different choices LC: Can I make adaptations to design a recipe? Lesson 3: Nutritional value LC: Can I evaluate nutritional content? Lesson 4: Preparing ingredients LC: Can I practise food preparation skills? Lesson 5: Designing labels LC: Can I design a product label? Lesson 6: Making bolognese To follow and make an adapted recipe.
Knowledge Capture Task	Assessment D&T Y5 : Gears and Pulleys Knowledge quiz	Assessment D&T Y5: Structures: Bridges quiz.	Assessment D&T Y5: Food: Developing a recipe quiz.

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NC Design Technology Links	**Design:** Noticing wider-reaching problems or needs in the community. Identifying a wide range of needs and potential barriers through market research. Writing more complex problem statements that consider multiple factors and constraints. Creating more complex design criteria that require considering detailed user needs, environmental impact, materials and cost. Coming up with a broader range of ideas and deeper innovation, requiring pupils to think critically about their ideas' practicality and originality. **Generate** Build on initial ideas. Beginning to use more complex annotated sketches, such as cross-sectional and exploded diagrams and pattern pieces in design. Using a series of prototypes to refine and improve their designs. **Make**	**Design** Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at individuals or groups. **Generate** Develop, model and communicate their ideas through discussion. **Make** Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities. **Evaluate** Investigate and analyse a range of existing products. Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. **Technical Knowledge**	**Design** • Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients. Writing an amended method for a recipe to incorporate the relevant changes to ingredients. Designing appealing packaging to reflect a recipe. Researching existing recipes to inform ingredient choices. **Make** Cutting and preparing vegetables safely. Using equipment safely, including knives, hot pans and hobs. Knowing how to avoid cross-contamination. Following a step by step method carefully to make a recipe. **Evaluate** Identifying the nutritional differences between different products and recipes. Identifying and describing healthy benefits of food groups. **Technical Knowledge**

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	Consistently apply safety instructions. Select appropriate scissors to handle delicate cutting tasks and challenging materials. Cutting patterns and drawings accurately. In supervised groups, using hot glue guns safely. Recognising that hot glue is useful for joining materials that need a strong bond that sets quickly. Choosing PVA glue over hot glue for its safety when joining materials in less intensive project. **Evaluate** Reflecting on the usability, aesthetics, innovation and sustainability of products and discussing how design choices impact these aspects. Assessing their designs against a more complex set of design criteria that includes functionality, aesthetics, user experience, sustainability and cost.	Apply their understanding of how to strengthen, stiffen and reinforce more complex structures	To understand where meat comes from - learning that beef is from cattle and how beef is reared and processed. • To know that recipes can be adapted to suit nutritional needs and dietary requirements. To know that I can use a nutritional calculator to see how healthy a food option is. To understand that 'cross-contamination' means bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects. To know that coloured chopping boards can prevent cross-contamination. To know that nutritional information is found on food packaging. To know that food packaging serves many purposes.

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	Considering alternative materials, tools or techniques that could enhance the product. Providing feedback that is helpful, specific, and encouraging. Incorporating feedback from peers or users improve their product further, explaining the changes they made and the impact they had. **Technical Knowledge** That mechanical systems that use gears in everyday objects (eg bicycle, clock). That gears and pulleys allow us to transfer movement and force from one part of a mechanical system to another. That gears allow us to increase the output of a mechanism.		
Possible endpoints and support for the least able	The key to success in the classroom lies in having appropriate adaptations, accommodations, and modifications made to the curriculum. As some pupils with SEND may need longer to master particular areas of the curriculum, all staff are committed to adapting their teaching and providing tailored or specialised resources to enable pupils with SEND to access the curriculum.		
Cross Curricular Links	**Science:** Use of Forces. **Geography**: Human and physical geography.		

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	British values: Mutual respect.		
Trip and Visitors			
Prior Learning Links	Please recap on the previous year groups learning before embarking on the current topic. Each unit of work will start with a gathering of knowledge and finish with a knowledge capture task.		

Year 6 Curriculum	Autumn	Spring	Summer
Topic Titles and Knowledge Outcomes	**Textiles** **Can you design and make a waistcoat?** On completion of the unit, pupils will know… • and understand that it is important to design clothing with the client / target customer in mind. • that using a template (or clothing pattern) helps to accurately mark out a design on fabric. • and understand the importance of consistently sized stitches.	**Digital world:** **Navigating the world** On completion of the unit, pupils will know… •that accelerometers can detect movement. •that sensors can be useful in products as they mean the product can function without human input. •that designers write design briefs and develop design criteria to enable them to fulfil a client's request •that 'multifunctional' means an object or product has more than one function. •that magnetometers are devices that measure the Earth's magnetic field to determine which direction you are facing.	**Structures** **Can you create a model of a new playground featuring five apparatus, made from three different structures?** On completion of the unit, pupils will know… • that structures can be strengthened by manipulating materials and shapes. • and understand what a 'footprint plan' is. • and understand that in the real world, design, can impact users in positive and negative ways. • that a prototype is a cheap model to test a design idea.
Lesson Sequence	Lesson 1 – Waistcoat Design	Lesson 1: Navigating the world	Lesson 1 – Design a New Playground

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	LC: Can I design a waistcoat? Lesson 2 – Preparing Fabric LC: Can I mark and cut fabric according to a design? Lesson 3 – Assembling a Waistcoat LC: Can I assemble a waistcoat? Lesson 4 – Decorating a Waistcoat LC: Can I decorate a waistcoat? Lesson 5 – Knowledge Capture Task	LC: Can I write a design a brief and criteria based on a client request? Lesson 2: Programming a navigation tool. LC: Can I write a program to include multiple functions as part of a navigation device? Lesson 3: Product concept LC: Can I develop a sustainable product concept? Lesson 4: 3D CAD models LC: Can I develop 3D CAD skills to produce a virtual model? Lesson 5: Product pitch LC: Can I present a pitch to 'sell' the product to a specified client? Knowledge Capture Task	LC: Can I design a playground with a variety of structures? Lesson 2 – Building Structures LC: Can I build a range of structures? Lesson 3 – Perfecting Structures LC: Can I improve and add detail to structures? Lesson 4 – Playground Landscapes LC: Can I create the surrounding landscape? Lesson 5 – Knowledge Capture Task
Knowledge Capture Task	Assessment D&T Y6: Textiles: Waistcoats quiz	Assessment D&T Y6: Digital World quiz	Assessment D&T Y6: Structures: Playgrounds quiz.
NC Design Technology Links	**<u>Design</u>** Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at individuals or groups.	**<u>Design</u>** Writing a design brief from information submitted by a client. Developing design criteria to fulfil the client's request. Considering and suggesting additional functions for my navigation tool.	**<u>Design</u>** Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at individuals or groups. **<u>Generate</u>**

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	Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. **Make** Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities. **Evaluate** Investigate and analyse a range of existing products. Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. **Technical Knowledge**	Developing a product idea through annotated sketches. Placing and manoeuvring 3D objects, using CAD. Changing the properties of, or combining one or more 3D objects, using CAD. **Make** Considering materials and their functional properties, especially those that are sustainable and recyclable (for example, cork and bamboo). Explaining material choices and why they were chosen as part of a product concept. Programming an N,E, S, W cardinal compass. **Evaluate** Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool. Developing an awareness of sustainable design. Identifying key industries that utilise 3D CAD modelling and explaining why. Describing how the product concept fits	Develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. **Make** Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities. **Evaluate** Investigate and analyse a range of existing products. Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. **Technical Knowledge** Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.

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		the client's request and how it will benefit the customers. Explaining the key functions in my program, including any additions. Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool. Explaining the key functions and features of my navigation tool to the client as part of a product concept pitch. Demonstrating a functional program as part of a product concept pitch. **<u>Technical Knowledge</u>** To know that accelerometers can detect movement. To understand that sensors can be useful in products as they mean the product can function without human input.	
Possible endpoints and support for the least able	The key to success in the classroom lies in having appropriate adaptations, accommodations, and modifications made to the curriculum. As some pupils with SEND may need longer to master particular areas of the curriculum, all staff are committed to adapting their teaching and providing tailored or specialised resources to enable pupils with SEND to access the curriculum.		
Cross Curricular Links		**<u>English</u>**: Reading – comprehension, Spoken language	

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		Computing – programming **Geography** – sustainability	
Trip and Visitors			
Prior Learning Links	Please recap on the previous year groups learning before embarking on the current topic. Each unit of work will start with a gathering of knowledge and finish with a knowledge capture task.		